DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT OFFICE OF HIGHWAYS	**EDSM No: VI.1.1.5**

ENGINEERING DIRECTIVES AND STANDARDS

VOLUME	VI	REVISION DATE:	May 14, 2015
CHAPTER	1	EFFECTIVE DATE:	August 25, 2011
SECTION	1	SUBJECT:	**Roundabout**
DIRECTIVE	5		

1. PURPOSE.

This directive sets forth the Department of Transportation and Development's (DOTD) policy for the justification, design and approval for roundabouts. The roundabout justification is typically submitted for Stage 0 but may not be limited to Stage 0.

2. SCOPE.

This policy applies to the State highway system and to local roads where state or federal funds will be used as well as to any improvements to the State highway system funded by a private entity, Parish or local governments that are constructed by permit. Roundabout reports shall be approved according to this policy prior to beginning design.

3. POLICY.

A) ROUNDABOUT JUSTIFICATION

Roundabout shall be justified by a benefit cost safety analysis or a capacity analysis comparison. There must be a sound engineering reason to justify the installation of a roundabout.

1. Locations where a roundabout may be an appropriate alternative:

   a. Intersections with poor visibility as long as stopping sight distance to the roundabout will be provided.

   b. Intersections with 5 or more reported crashes, of types susceptible to correction by a roundabout, which have occurred within a 12 month period. Each crash involved personal injury or property damage apparently exceeding the applicable requirements for a reportable crash.

   c. Increases capacity of an intersection(s).

d. Intersections with limited space for queuing.

e. Intersections with difficult skew angles, significant offsets, odd number of approaches or close spacing to other intersections.

f. Intersections where U turns need to be accommodated.

2. A roundabout is not an appropriate alternative when:

a. State or federal funds are being used to construct a roundabout strictly for access to a private development. A roundabout may be installed on a state route for the purpose of accessing a private entity but it shall be done under a project permit and shall be privately funded.

b. Where capacity requirements dictate 3 or more circulating lanes at any point within the roundabout.

B) ROUNDABOUT REPORT

A comprehensive investigation and report of traffic conditions and physical characteristics shall be made of the location. The report shall be prepared by a professional engineer from a local government, consultant or DOTD staff. This report shall be recommended by the District Traffic Operations Engineer and the District Administrator and approved by the Traffic Engineering Division Administrator. This report shall include:

1. Crash history of the site for the past 3 years with a chart listing the number of correctable crashes. Correctable crashes shall be defined as: head on, right angle, left turn (E, F, G)

2. Traffic Volumes

a. 7 day 24 hour approach counts hourly with subtotals including classification counts identifying truck volumes are required on the mainline. Counts must be completed during a 7 day period that does not include a holiday or special event.

b. When the intersecting route volumes identify it as the minor approach, 48 hour approach counts with classification are acceptable. Counts cannot be taken during a holiday or special event week.

c. Manual Turning Movement Counts will be taken during the AM and PM peak hours. If applicable, these counts may also be required during the noon and/or weekend peak period. Counts cannot be taken during a holiday or special event week.

d. For design purposes, peak hour counts will be projected for a 20 year design life, measured from the anticipated build year. In general, the build year can be

approximated to be 3 years from the date of the traffic study. The Traffic Engineering Division Administrator must approve any waivers to the design year requirement.

e. If applicable, pedestrian volumes should be taken during the peak periods.

f. Roundabouts should not be planned to include metering or signalization at the time of construction.

3. Speed study for mainline approaches

   a. A speed study as defined by EDSM VI.1.1.1 and the DOTD Traffic Engineering Manual is required on the mainline. The posted speed is not a substitute for the speed study and will not be accepted.

4. Analysis of roundabout operation

   a. ***Sidra Intersection*** [computer software] (Akcelik & Associates) shall be run to compare the level of service and the v/c ratio between roundabouts, signals and stop controlled intersections. The program settings must be set per DOTD requirements as indicated in the DOTD Roundabout Analysis Brochure. This brochure identifies the analysis reports that must be included with the roundabout study report. An electronic copy of the Sidra analysis file shall also be submitted with the report.

   b. DOTD does not accept HCS software for roundabout analysis.

   c. **VISSIM™** [computer software] (PTV America) model may be required due to the complexity of the project. This could include closely spaced roundabouts or a roundabout proposed in or adjacent to a coordinated signal system. The purpose of using this software is to show an animation of how the corridor would operate. If VISSIM is required, then an electronic copy shall be submitted with the report. Calibrated VISSIM models may also be required and in such cases shall meet requirements established for calibrated traffic model submittals.

   d. The designer must at minimum provide an AutoTURN®[computer software] (Transoft Solutions) analysis that shows that the proposed roundabout can accommodate the design vehicle. The design vehicle is the WB-67 truck. The Traffic Engineering Division Administrator shall approve any waiver to the design vehicle. The designer shall also note if the intersecting routes are major Oversize-Overweight (OSOW) Truck routes, as this may require an alternate design vehicle. If this is the case, the Traffic Engineering Division Administrator will provide guidance on the appropriate design vehicle and additional accompanying AutoTURN runs that may be required.

e. Identify any safety concerns. This may be shown by utilizing the *Highway Safety Manual* but note that not all safety concerns are identified in the *Highway Safety Manual.*

5. Impacts On Surrounding Areas

   a. Identify adjacent intersections and commercial driveways that the roundabout may affect.

   b. Review of nearby land use:

      i. Right of Way Issues
      ii. Access Issues
      iii. Operational Issues
      iv. Utility Issues

6. Roundabout Layout - Conceptual drawing on an aerial photograph showing proposed layout, potential utility relocations and required right of way based on field investigations and/or available as built information. The following shall be shown:

      i. Appropriate geometry for the entry and exit of the design vehicle;
      ii. Note from a site inspection if there are any potential horizontal and/or vertical geometry issues;
      iii. Approximate right of way as determined from site visit;
      iv. Nearby driveways, intersections, and traffic control types within 95% queue lengths;
      v. Apparent utility locations as determined from site visit;
      vi. Sidewalk location;
      vii. Apparent drainage issues as determined from site visit.

C) ROUNDABOUT CRITERIA

See LADOTD *Roadway Design Procedures and Details Manual.*

4. APPLICATION OF STANDARDS.

Standards related to roundabout study shall apply immediately to all new installations that have not been previously approved. The design standards shall apply immediately to projects currently in the preliminary plan development of the project. The design of a roundabout and approaches to the roundabout are independent of the design criteria for the corresponding roadway classification.

5. WAIVERS.

Deviations from this policy and shall conditions contained in the Roundabout Criteria section of the *Roadway Design Procedures and Details Manual* shall be requested in writing along with engineering justification for the variation from policy. The request shall be submitted to the Traffic Engineering Division Administrator who may approve a waiver in policy.

6. OTHER ISSUANCES AFFECTED.

All directives, memoranda or instructions issued heretofore in conflict with this directive are hereby rescinded.

7. IMPLEMENTATION.

This directive will become effective immediately upon issuance.

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